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II. CHARCOAL STUDIES FROM THE OFFICE OF CHARLES A. PLATT, ARCHITECT

BY JERAULD DAHLER

BECAUSE of its large size a building must first be designed at a small scale, usually one-sixteenth or one-eighth of an inch. As the design progresses and the detail developes, the scale increases to one-quarter of an inch or larger. For working purposes these are expressed in geometric drawings. Before the Architect can see the actual result of his endeavors, that is the building, every detail of plan and elevation must have been worked out graphically on paper in this manner. Sometimes a perspective sketch is resorted to when studying a composition, but on the whole, it has been found that flat geometric drawings are the most practical to use, because of their simplicity and exactness for working by and designing.

However, dealing with designs of solids on a flat surface in this fashion, is often vague and uncertain. In order to assist the designer to better see the real values of his design of masses and voids it has been found expedient to employ imitation shadows representing the effect of natural sunlight, cast on the drawing at a certain angle. This portrays a very realistic semblance of the intended building or detail of building, as the case may be. Like the model, this too, is by no means a new idea, having been practiced for ages, back to the time of the Renaissance in Italy at least, for there are many examples extant of drawings executed at that time, and similar to those we use today, showing detail carefully worked out to produce a realistic appearance, and which give evidence that their purpose was to assist the designer to see his conception clearly before carrying out the actual work. Today the practice of studying in this way is quite common. Every architectural school has a course in "shades and shadows" in its curriculum, which must be mastered by the student before he can advance far. In fact, it has now come to be the "taken-for-granted" method of studying a design as a test of its qualities, and as such is quite satisfactory.

In the schools ink washes are the first medium that the student is taught to use. The drawing of an order or some simple composition is carefully made in ink lines, then wash after wash is applied to represent the proper shadows, grading them for variety of value by the number of such washes put on. It is a very slow and tedious performance, and as such serves its purpose well to instill its principle into the mind of the student. When he has finished the course in this kind of rendering and has acquired more or less proficiency in the knowledge of handling shadows, he is allowed to pass on to the use of water color instead of ink wash. With this a greater freedom is permitted, but at the same time the original idea of showing shadows to give more vivid representations of the piece of work, changes from that to showing the shadows to make the drawing look as attractive as can be. In other words, the student now learns to make pictures or presentation renderings. Pencil, pen and crayon, come into use, too, to the same end as water color. It so comes that values are considered in relation to the appearance of the sketch, not in relation to the profile or projection of the masses which cause them. Any trick that produces a more "snappy" effect is learned and practiced without compunction, whether it adheres to governing laws or not. These drawings give an impression of the effect produced by shadows on a building, but by no means an accurate, definite or true portrayal. They are practically useless in an office as a means of study.

Although wash drawings, like the student is first taught to make, can be, and are, used successfully for purposes of study, they are impracticable in an alive, modern office, because they require so much time for their execution. On the other hand, a drawing that can be made, having the good qualities possessed by those of ink wash, but will permit of a facility compatible with the requirements of the modern office, is a valuable agent. Mr. Shell Lewis, who is the author of the studies shown herewith, has solved the problem of a successful method of studying architectural designs, in an interesting and economical fashion. It is by casting the usual shadows on a drawing with charcoal, on tracing paper placed immediately over the geometric drawing of the design. While drawings made in this manner may not be superior to wash renderings or yet as satisfactory as miniature models, they are a good substitute for both, and are much cheaper to produce.

Of course charcoal has been in use as a means of drawing for ages and ages. I do not know, but imagine it came into vogue about simultaneously with the discovery of

(Continued page 149)

ENTRANCE, CITY HOUSE. STUDY IN CHARCOAL. Charles A. Platt, Architect.

(*Continued from page 147*)

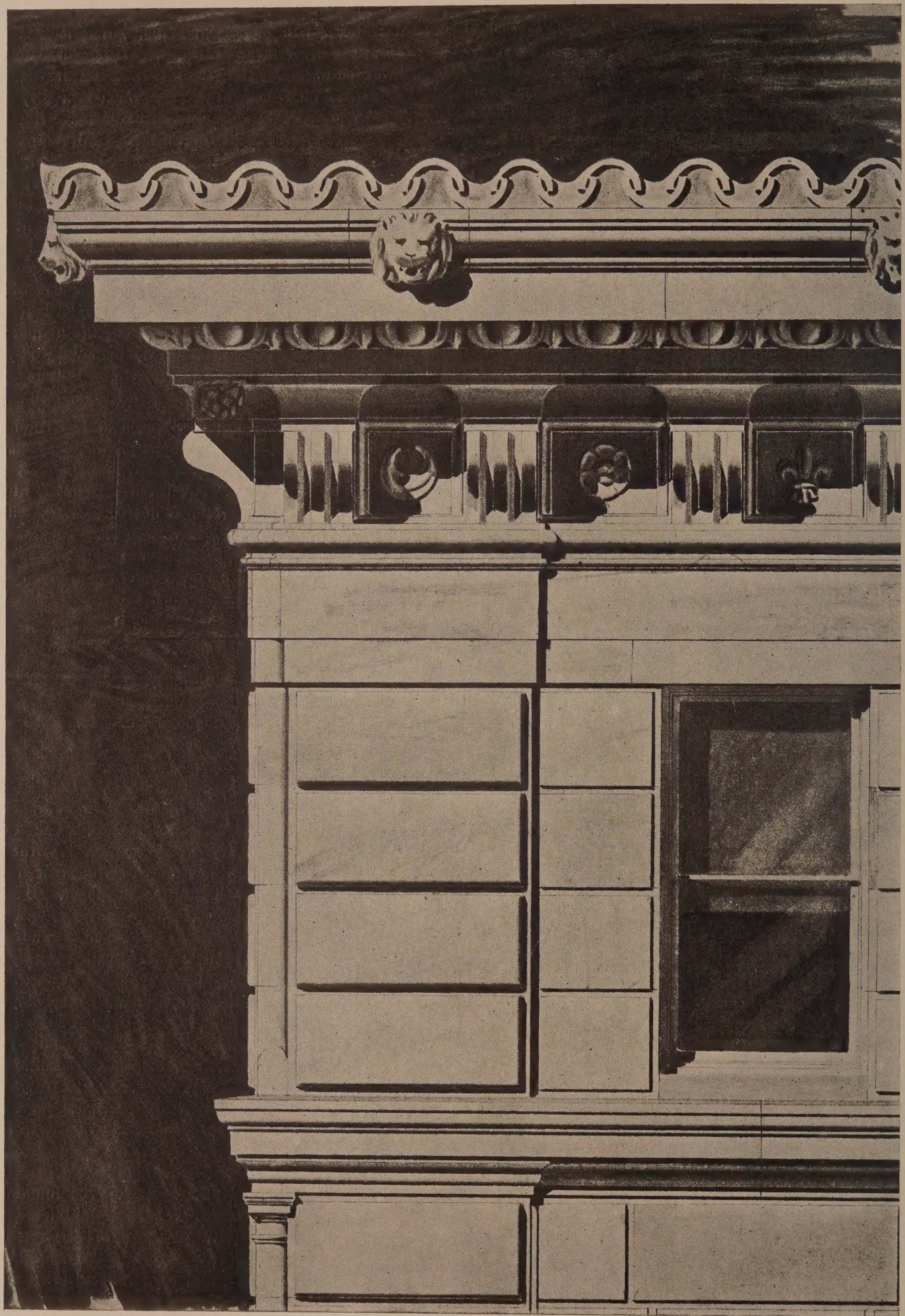
the fire that produces it. In any case it is well known in these more modern times, and in various spheres of activity. Those of the architectural profession, who have ever attended an art school, are familiar with the use of it for sketching from plaster casts and from models, etc., for charcoal is the first medium intrusted to the hand of the student, because it is so simple to use. Painters use it commonly, long after art school is a thing of the past, for rough sketching and for blocking in their drawings before beginning a picture. Also it is a favorite with illustrators. A very large percentage of the illustrations in current periodicals are of charcoal. It is employed for making stained glass designs and in countless other ways, the reason being the advantages it offers over other means of expression. Nevertheless, despite its many merits, I do not believe it is appreciated among Architects. I will tell why I think it should be, from what I have learned about it as used in Mr. Platt's office, both by my own practice with it and by observation. In the first place, the only bond of similarity between its employment in an Architect's office and the various uses I have just mentioned, is the ease and facility with which it is handled. An Architect cannot use it to make line drawings or sketches to advantage; a lead pencil is much more adaptable here because drawings should be sharp and clean, but for rendering purposes it is excellent. Because of its softness, charcoal permits the use of a large variety of tones, which can be graded and adjusted in a remarkable short length of time. Even the most intricate and involved of the studies shown herewith, were made in less than a day's time. The large majority of them required not more than a few hours. Plate on page 154, for instance, made over a full size detail drawing, was executed in two hours and a half. Hence its advantage over a similar study in ink wash is obvious, if not in the effect produced, and I believe it is, at least in the rapidity of its doing. As with wash, it is not necessary to apply tone after tone until the desired one is reached. If a deep black is wanted, it may be had immediately by applying heavy strokes of the charcoal stick. If the tone put on is too heavy, it may be lessened by lightly going over it with a stump, composed of blotter-paper, especially made for the purpose, or with a piece of cloth. It is this flexibility of the medium that renders it so practical for office use. Over-all tones may be made perfectly flat, or given a texture according to the character of the material represented. Page 156 depicts a loggia of plaster stucco. The cornice is of wood. Note the difference in the representation. Note also the distinction between the stone and brick of the country house entrance on page 152. Reflected lights, which give the brilliance to all shadow drawings as well as to the actual work, can be handled much more definitely and accurately with charcoal than with any other material. This is well illustrated on pages 150 and 158. In fact, a close observation of the studies shown herewith, can tell more fully than I, the possibilities open to the student in this work. There are no secrets connected with the production of studies such as these, that are not open to all. Anyone who has a knowledge of "Shades and Shadows" as taught in school or in books on the subject, can, with little practice, obtain results which I dare say will be surprising.

You will notice reproduced here studies of various types and portions of designs, interiors and exteriors, made from small scale drawings and from full size drawings of detail and ornament. Everything can be studied in charcoal. And while it will be found, perhaps, that it is easier and quicker to use for large drawings, it is possible and serviceable for both. The studies of entrances were made from three-quarter inch scale drawings, which is a very satisfactory scale to work in. The detail of entrance cornice and cap (Page 154) was made from a full size drawing. Drawings such as these, when they contain any ornament, serve the Architect a double purpose. First they are useful in determining the scale and character of the ornament in relation to the building itself, and to the moldings near it. Then, when these are judged satisfactory by the Architect, the studies are handed over to the modeller, along with the working detail. In this way the modeller has something more definite to work from, and a better idea of what is wanted by the Architect, and so can execute his part of the design quicker and more intelligently than with only a geometric drawing. Reliefs and projections can be followed better than if he were copying a photograph.

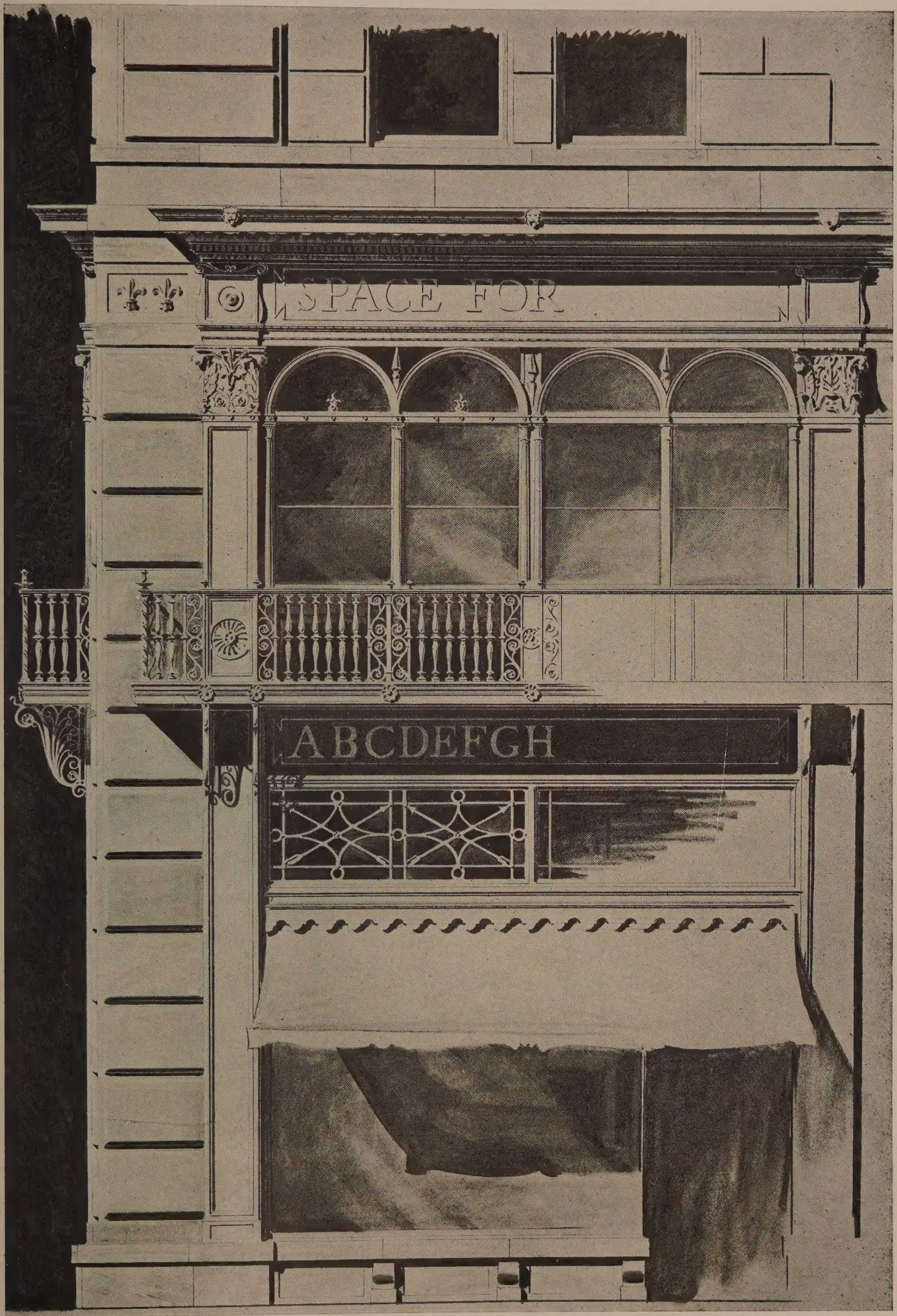
If, after a study has been finished, it is desirable to change some part of it, this is simply done by making a "paster" showing the proposed innovation, and by placing it over the original study. An instance of this is illustrated on page 150. This cornice was not considered, when first rendered, in proper scale. It was re-designed and a study of it alone made and pasted over the old one, without changing the remainder of the rendering in the least, and thereby affording a saving in time.

The following are a few suggestions that may be of service to the student in this work.

The charcoal is the ordinary type used for drawing and needs no further description. The blackest pieces are the most satisfactory to use. In small scale work where fine lines are required the piece should be hard enough to hold a point and at the same time be sufficiently black. If too soft it will smudge and crumble. In larger scale work, however, the softest is the most desirable, especially for heavy shadows and backgrounds. The stick may be pointed on the ordinary sand scratcher. As the studies are made directly over working drawings, it is necessary to make them on a transparent paper. The usual white tracing paper or any with a soft surface, will do, but it has been found more suitable to use paper with a buff tone. The paper used in Mr. Platt's office is called canary yellow and comes in rolls similar to other tracing papers. Besides the ordinary T-square and triangle, the only other implements required are a few stumps of varying sizes. These, and one's fingers, are used for smoothing out tones. The T-square and triangle are used as when drafting. In using them, however, care must be taken to prevent smudging parts already put on. If it happens to be necessary to work the T-square or triangle over a part already finished, one will lessen the liability of injuring that part by inserting a few thumb tacks in the under side of them so that they will be held safely up from the paper. It will be found best to work from the top of the sheet down, finishing each part as it comes. Parts requiring a tone to distinguish them from other parts, should be gone over lightly and as evenly as possible with the stick, and then rubbed down until the proper shade is obtained, before any shadows are cast on them. When drawings are completed they should be made safe against injury, by blowing over them a fluid made for the purpose, which is composed of alcohol and shellac.



DETAIL, CORNICE, COMMERCIAL BUILDING, STUDY IN CHARCOAL. Charles A. Platt, Architect.



DETAIL, SHOP WINDOW, COMMERCIAL BUILDING. STUDY IN CHARCOAL.

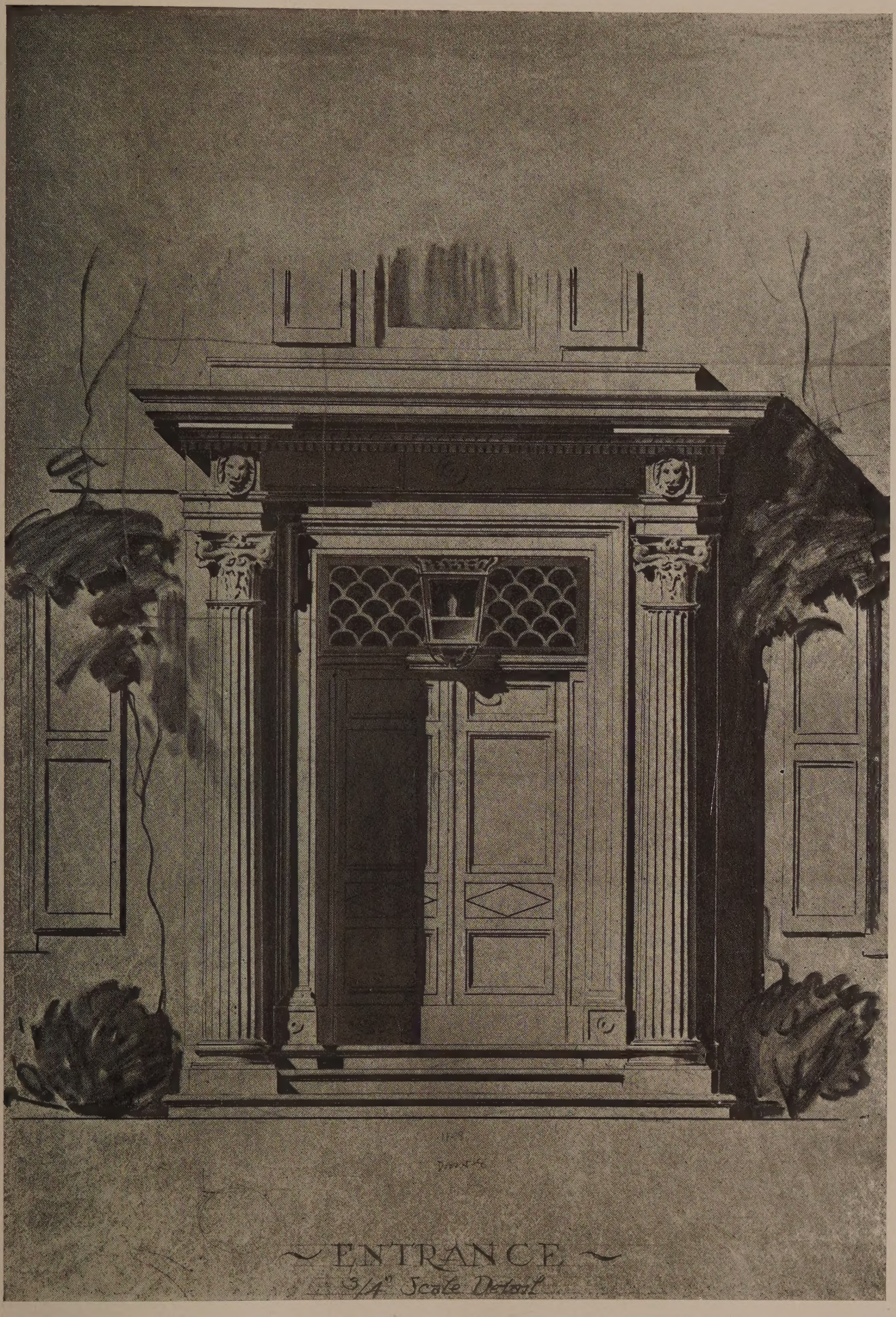
Charles A. Platt, Architect.

ENTRANCE, COUNTRY HOUSE. STUDY IN CHARCOAL. Charles A. Platt, Architect.

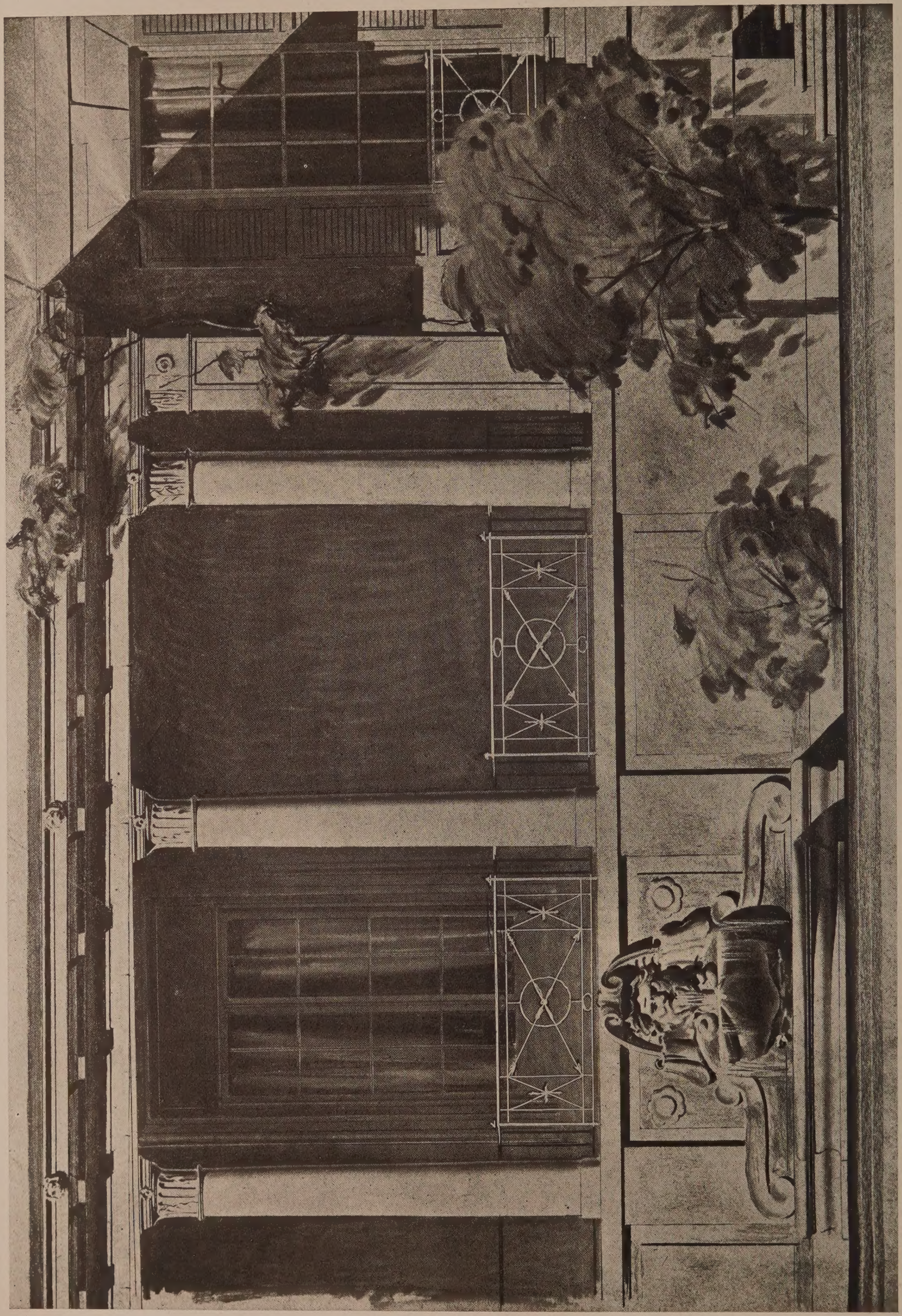
ENTRANCE, COUNTRY HOUSE. STUDY IN CHARCOAL.

Charles A. Platt, Architect.

DETAIL, ENTRANCE, COUNTRY HOUSE. STUDY IN CHARCOAL. Charles A. Platt, Architect.

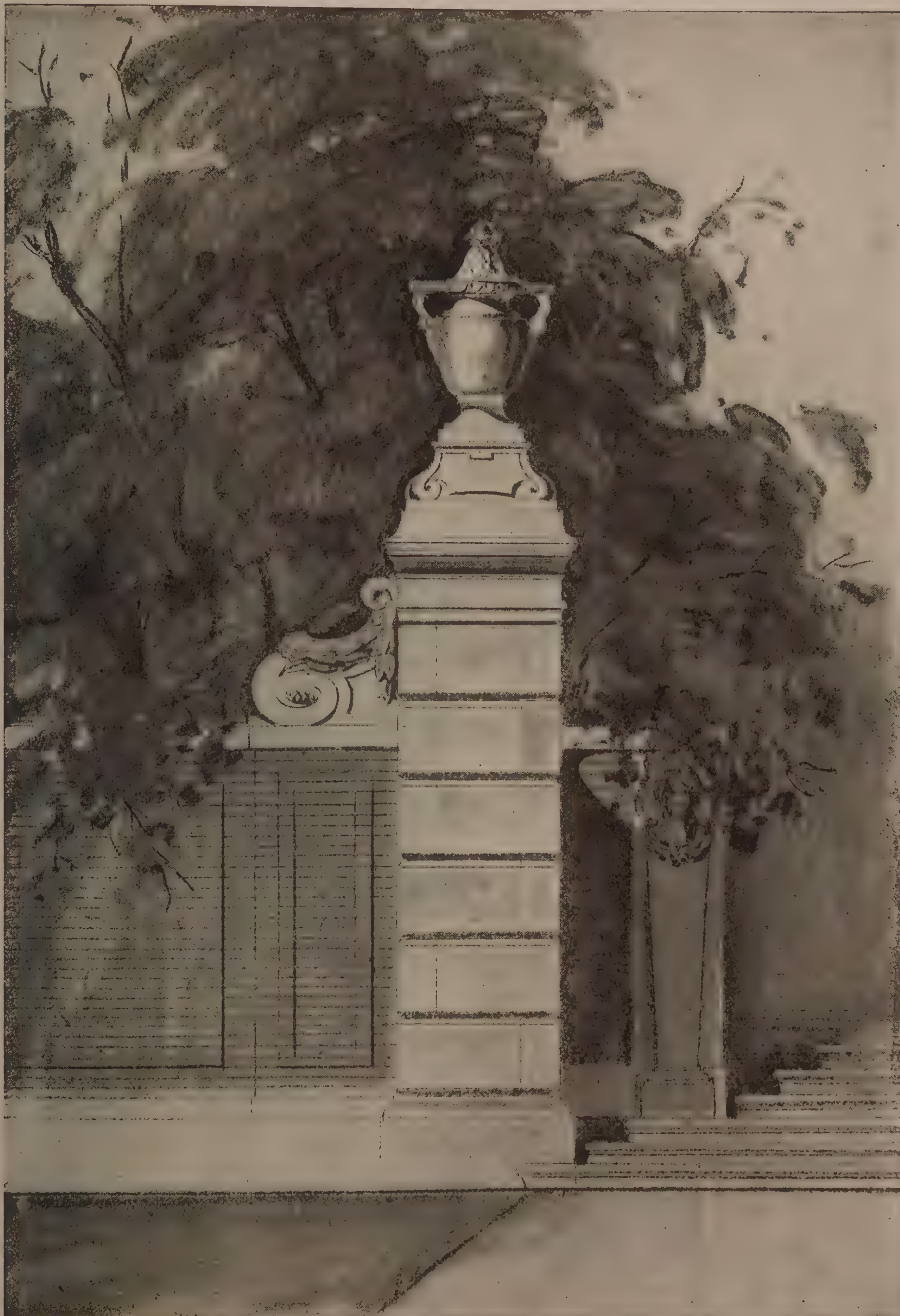


ENTRANCE, COUNTRY HOUSE. STUDY IN CHARCOAL. Charles A. Platt, Architect.

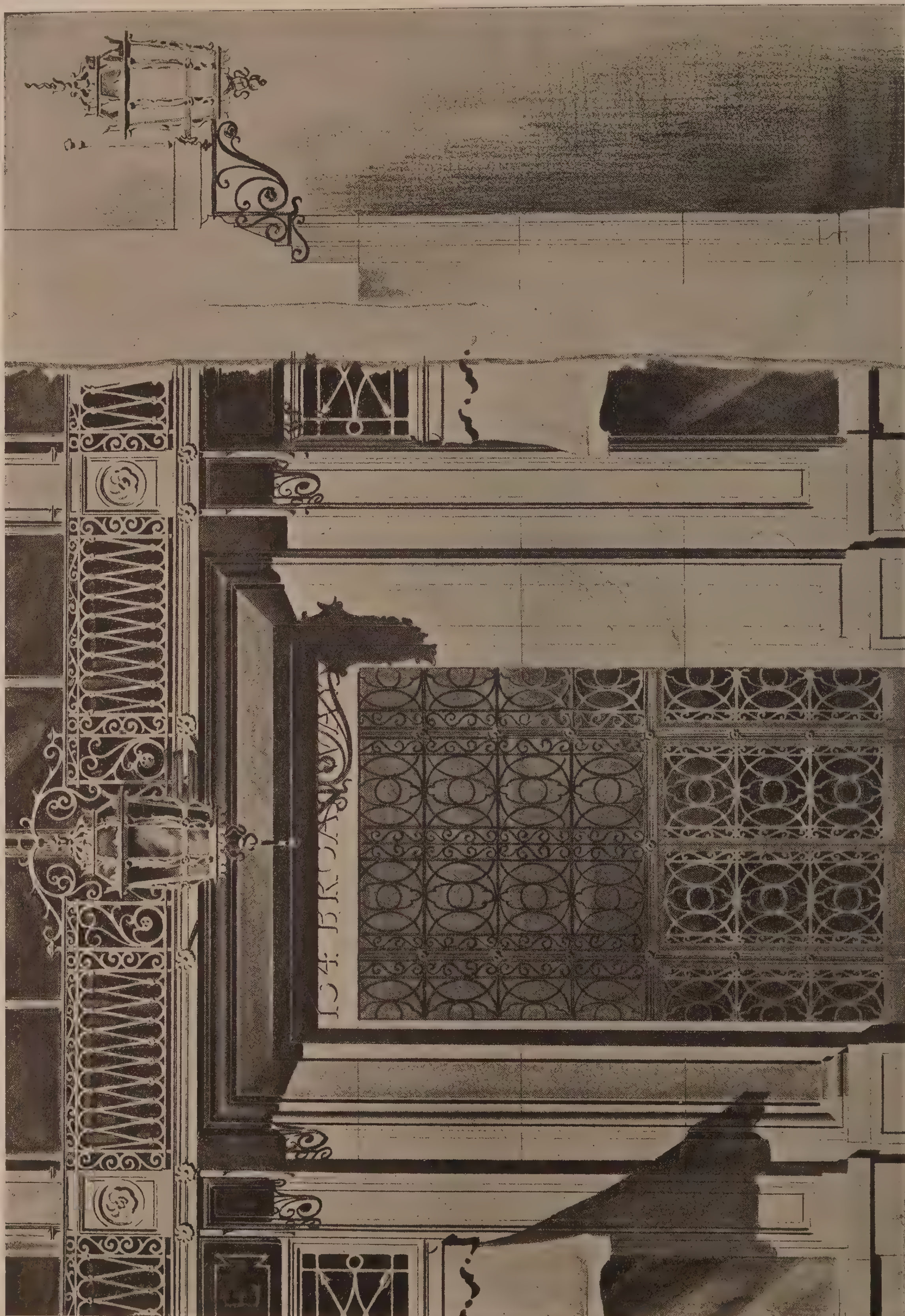


LOGGIA, COUNTRY HOUSE. STUDY IN CHARCOAL.

Charles A. Platt, Architect.



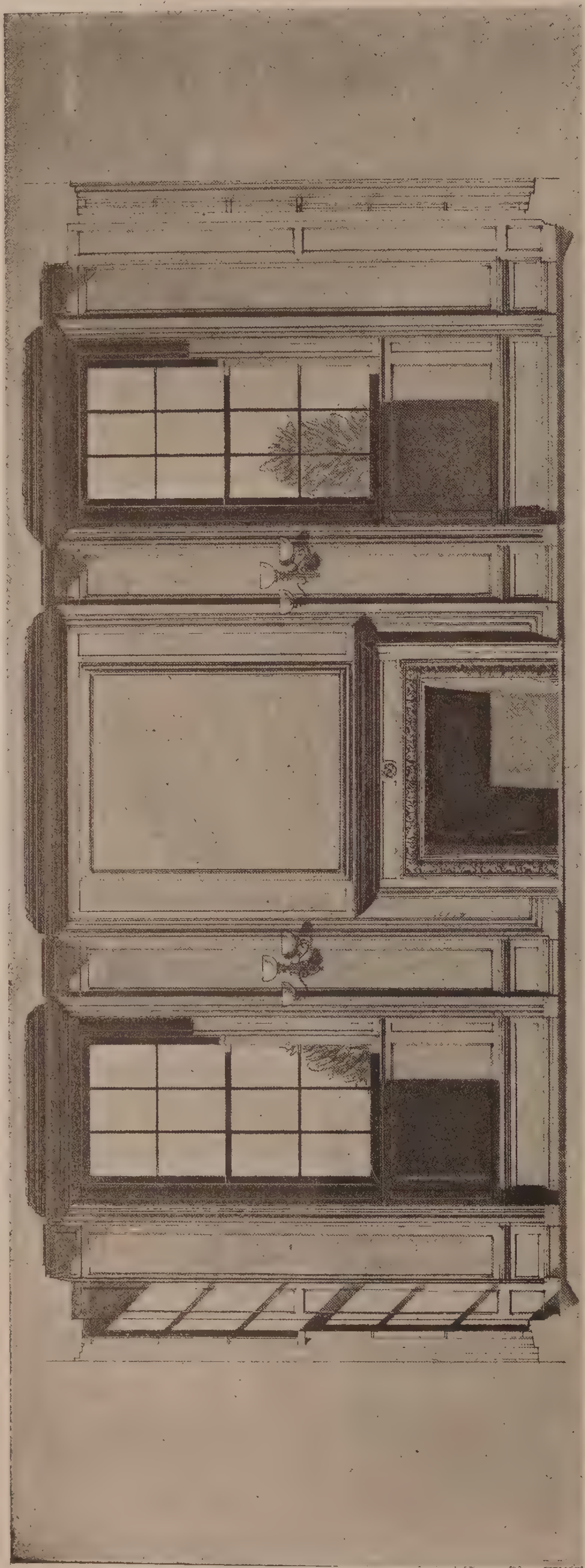
DETAIL, GARDEN ENTRANCE. STUDY IN CHARCOAL. Charles A. Platt, Architect.

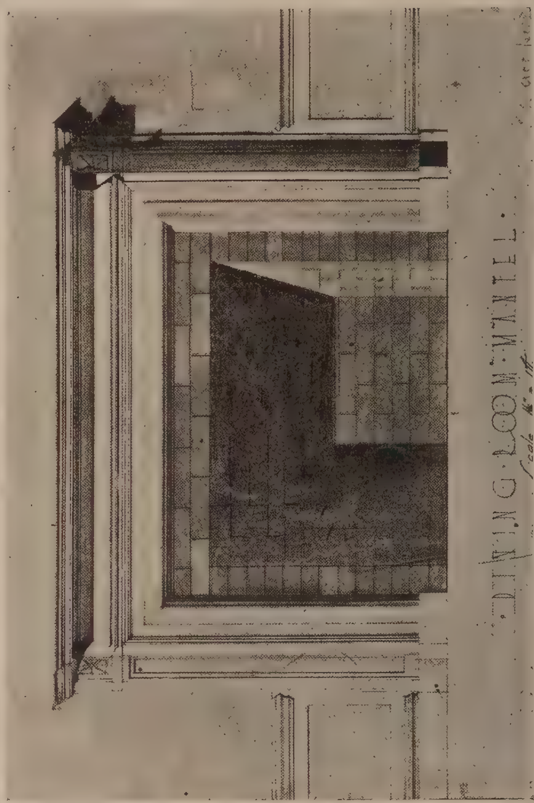


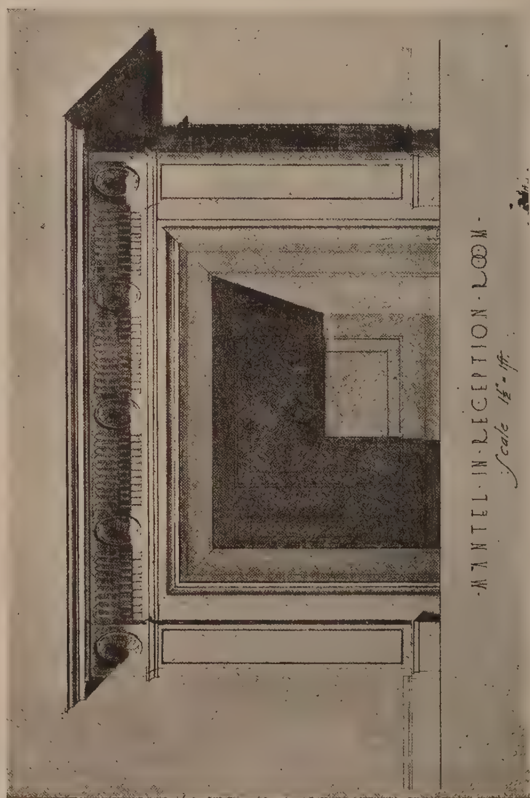
ENTRANCE, COMMERCIAL BUILDING. STUDY IN CHARCOAL.

Charles A. Platt, Architect.

STUDIES IN CHARCOAL. Charles A. Platt, Architect.

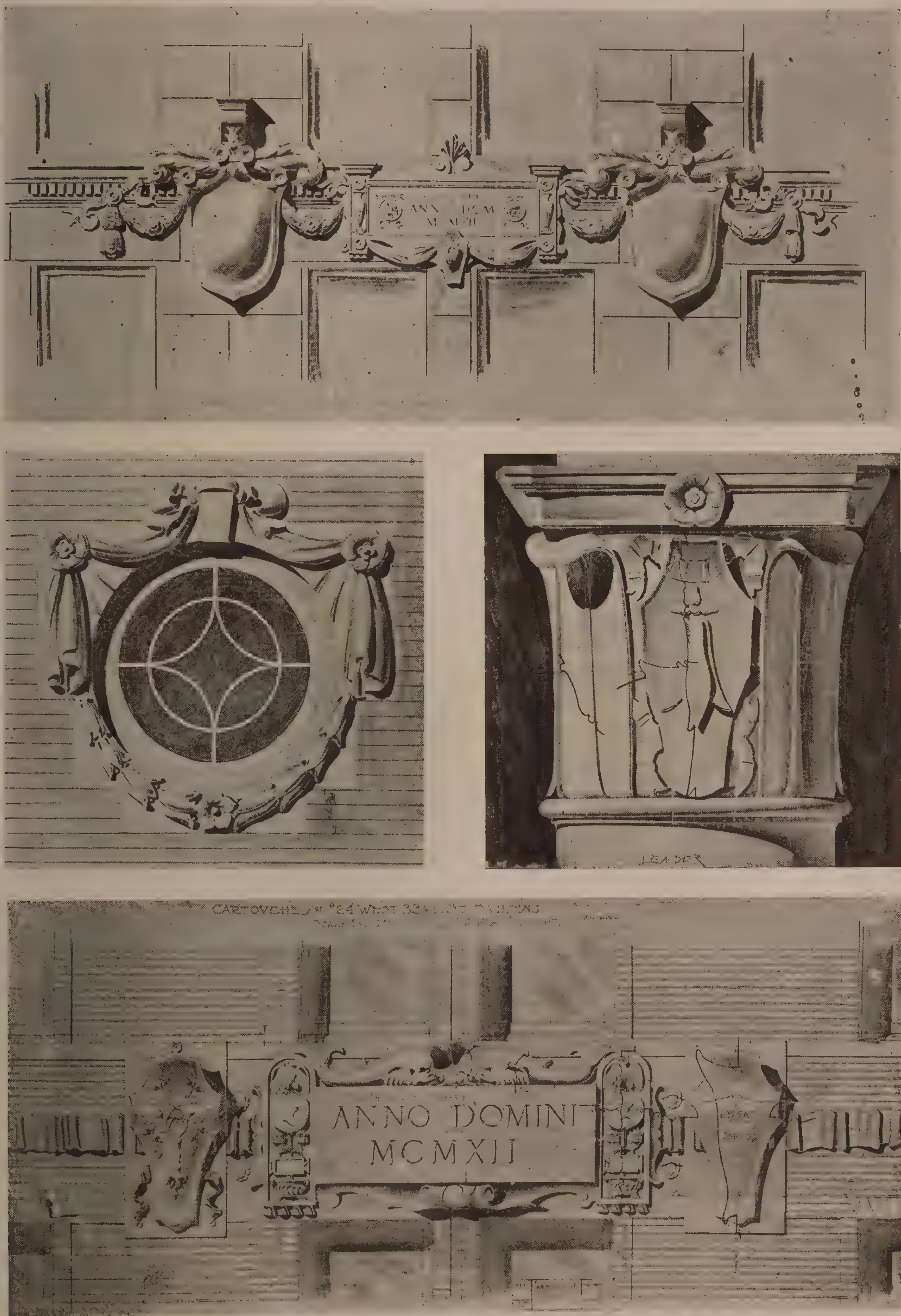




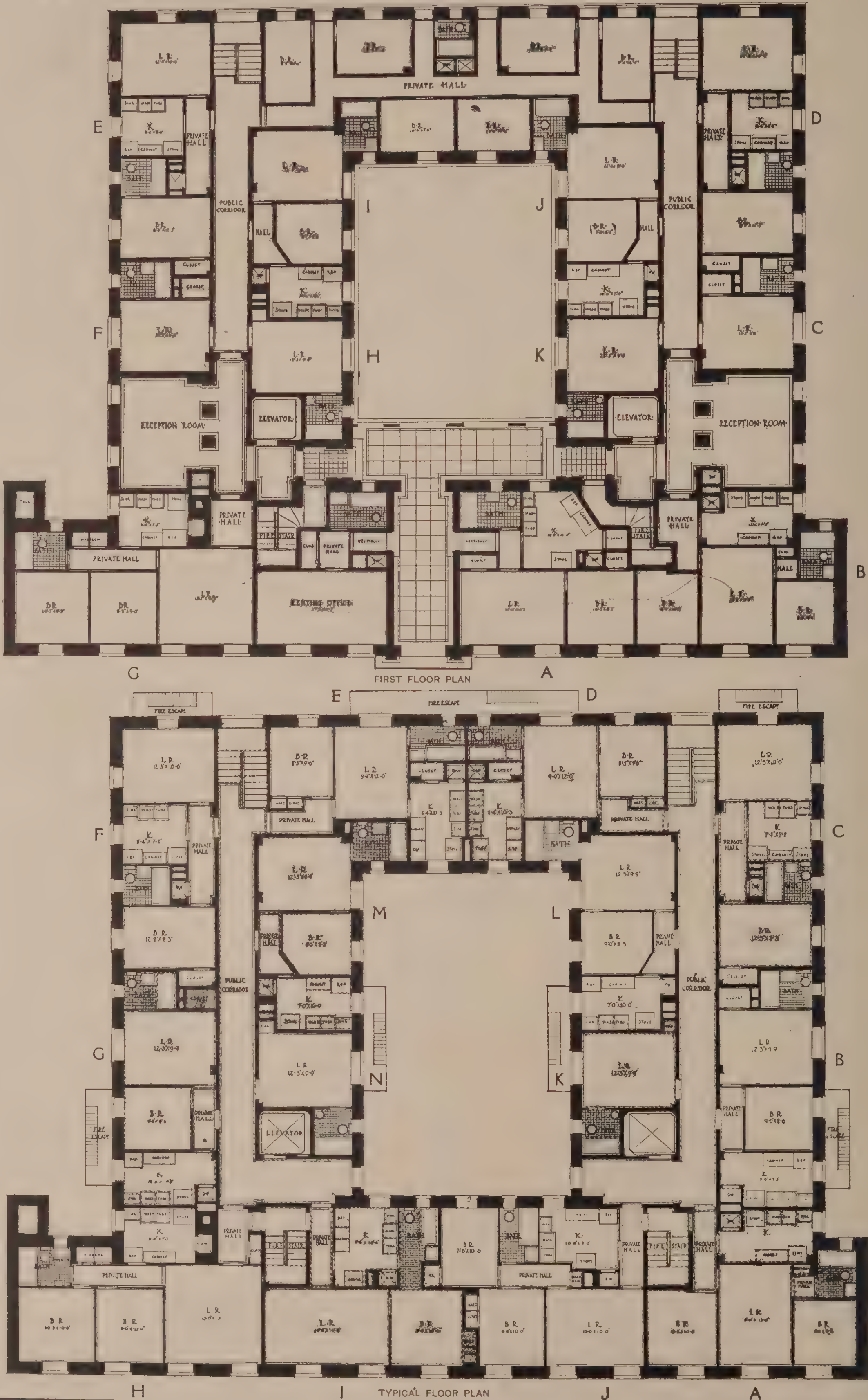


STUDIES IN CHARCOAL.

Charles A. Platt, Architect.



STUDIES IN CHARCOAL. Charles A. Platt, Architect



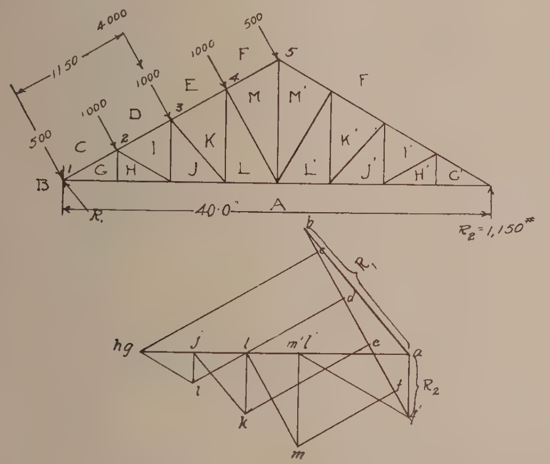
PLANS, ASTOR APARTMENTS, 305 W. 45TH ST., NEW YORK. (Plate LVII). Tracy & Swartwout, Architects.

XII. ENGINEERING FOR ARCHITECTS

BY DEWITT CLINTON POND

Mr. Pond has charge of the practical course in structural design at Columbia University. He is extremely successful in instructing men who have had little knowledge of mathematics, and these articles have been written with that in view.

IN order to establish the reactions in case one end of a truss is fixed and the other end free, the same method is employed as in the case of a simple beam, but, because the wind load is considered as acting in a direction perpen-



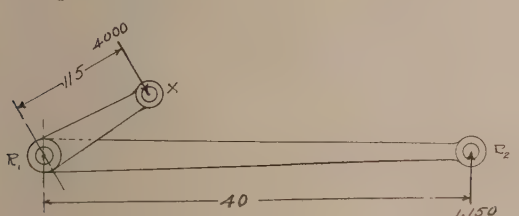
FIGVRE 70

dicular to the upper chord of the truss, and the right reaction, —R_2—which is supporting the free end, acts upward in a vertical direction, there is a tendency to consider that this process is very difficult.

Fig. 70 is the same as Fig. 69, except the right end of the truss is considered as resting on rollers, or on an iron plate over which it can slide. The advantage of this is that allowance is made for expansion or contraction due to changes of temperature. If there is no restriction of the action of the truss in a horizontal section, the only action that can be developed at R_2 is an upward one. It is therefore necessary to determine what this upward action is.

The moment around R_1, caused by the wind, is exactly the same as in the case where both ends of the truss are fixed. The load is still 4,000 pounds and is considered as acting at panel point No. 3. The lever arm is 11.5 feet. The moment is therefore the same as before—46,000 foot-pounds. To withstand this moment an opposite moment must be caused by R_2.

As R_2 in this case acts upwards, the *perpendicular* dis-

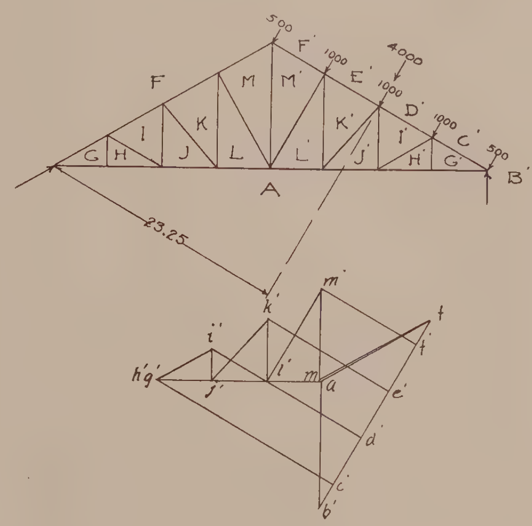


FIGVRE 71

tance from R_1 to R_2 is 40 feet. The equation which gives the magnitude of R_2 is 46,000 foot-pounds$=R_2 \times 40$ feet, or, $R_2=46{,}000 \div 40=1{,}150$ pounds.

Because the condition is applied to a truss, and because the forces are spoken of as wind loads and reactions, there is a tendency to make a mystery of this example. If the same conditions were applied to a compound lever, such as found in automobiles, the mystery may be explained in a more simple manner. In Fig. 71 such a lever is shown, which is supposed to be pivoted at R_1, around which point it can swing freely, and a load of 4,000 pounds is supposed to be applied at X in a direction perpendicular to R_1X. This force would tend to swing the lever around R_1, a moment of 46,000 foot-pounds having been created. But a force is exerted upward at R_2 which tends to hold the lever in its position. This force has a lever arm of 40 feet. How much force must be exerted at R_2? This is exactly the same example as given in the preceding case.

Once R_2 is established, the stress diagram is drawn *bc, cd, de, ef,* and *ff′* are laid off as in Fig. 69, but *f′a* offers a new problem. As has been said, *F′A*, the right reaction, is a vertical force and so *f′a* must be drawn *upward*. The length of the line is determined by the magnitude of *F′A*, or 1,150 pounds. The Architect may have

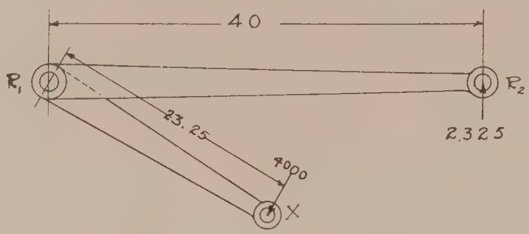


FIGVRE 72

noticed that R_1 has not yet been determined, but all that it is necessary to do in order to establish both the direction and magnitude of the left reaction is to connect *a* and *b*. The line *ab* gives the necessary information about *AB*, or R_1. Once all the external forces are plotted, the next step is the determination of the stresses in the members. This is done in exactly the same manner as in Fig. 69. It will be noticed that *cg, di, ck, fm,* etc., are of the same magnitude as in the case where both ends of the truss are fixed. The only members in which the stresses are different are those in the lower chord *GA, HA, JA* and *LA*.

When both ends of the truss were fixed, only one stress diagram was necessary. When the wind blows from the right the stresses in the members on the right side of

the truss would equal those in the left side when the conditions were those shown in Fig. 69. With one end fixed and the other free, *two* wind stress diagrams are necessary. This is due to the fact that R_1 and R_2 are different when the wind blows from opposite sides of the roof.



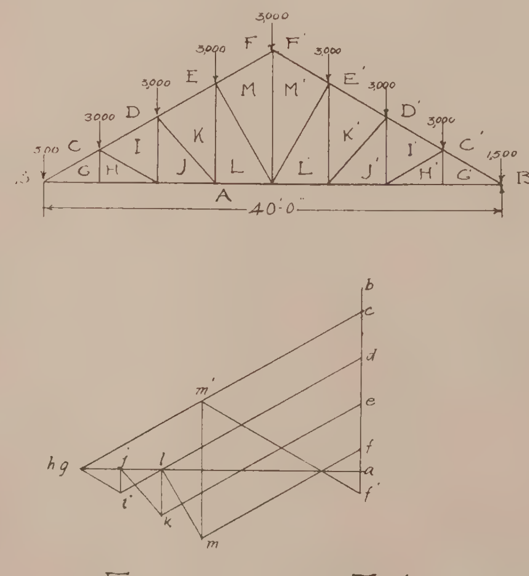
FIGVRE 73

The method of finding R_2, in the case where the wind blows from the right, needs but little explanation. Fig. 72 is like that of the case where the wind is from the left, the only difference being that the lever arm of the wind load is longer. This follows from the fact that the direction of the wind load is different, and the *perpendicular* distance from R_1 to the 4,000 pound load is 23.25 feet. The moment is 4,000 pounds $\times$ 23.25 feet=93,000 foot-pounds.

The lever arm of R_2 is the same as before, 40 feet, so R_2 must equal 93,000÷40=2,325 pounds.

If it is desired to show how this condition is represented by a compound lever, note the diagram shown in Fig. 73. The lever arms and loads are represented in the most simple manner.

Once R_2 is determined, the stress diagram is plotted—Fig. 72. It will be noticed that the loads start with FF' and read in the stress diagram in the following order: ff', $f'c'$, $c'd'$, $d'c'$, $c'b'$, $b'a$, and af. The left reaction—R_1—is given by the last named line—af—and its direction is shown on the truss diagram.



FIGVRE 74

In the two wind load diagrams and the dead load diagram shown in Fig. 74, all the stresses that may occur in the truss are shown. It now remains for the Architect to scale the lines which show the stresses and to tabulate them as shown in Fig. 75. This table is self explanatory. The total stresses are recorded in the *total* column and the signs denoting them represent the size and kind of stress in each member. This stress is the *largest* that will occur, but is not the sum of all the stresses. It represents the sum of the dead load stress plus the *greatest* wind load stress.

To design the members of the truss it is necessary to know the *kind* of stress that occurs in each. If the member is in tension, all that is necessary to do is to divide the stress by 16,000 pounds, and the number of square inches necessary in each particular member is given.

On the other hand the compressive stresses tend to buckle members in which they occur and these members must be designed as small columns. The formula S=15,200—581/r is used in the same manrer as given in a previous article. For the purpose of simplifying the design of the truss the upper chord is made of angles that will understand the stress occurring in *CG*, although the stresses in *DI*, *EK* and *FM* are smaller than this. The same is true of the angles in the lower chord, the stress that governs the design is found in *GA*. Although smaller stresses may

MEMBER	DEAD LOAD	WIND LOAD L.	WIND LOAD R.	TOTALS
CG	+ 21,000	+ 3,600	+ 2,300	+24,600
DI	+ 18,000	+ 3 200	+ 2,300	+21,200
EK	+ 15,000	+ 2,600	+ 2,300	+ 17,600
FM	+ 12,000	+ 2,100	+ 2,300	+ 14,100
GA	− 18,500	− 5,000	− 1,000	−13,500
HA	− 18,500	− 5,000	− 1,000	−13,500
JA	− 15,750	− 4,000	− 1,000	−19,750
LA	− 13,000	− 3,000	− 1,000	−16,000
HI	+ 3,000	+ 1,175	0	+ 1,175
IJ	− 1,500	− 600	0	− 2,100
JK	+ 4,000	+ 1,500	0	+ 5,500
KL	− 3,000	− 1,200	0	− 4,200
LM	+ 5,000	+ 2,000	0	+ 7,000
MM'	− 9,000	− 1,800	− 1,700	−10,800

FIGVRE 75

occur in members on the left side or right side, as the case may be, of the truss, both sides are made alike.

It is not necessary to design all the details of the truss, as the steel contractor will finish shop drawings of these. It is necessary, however, to give the stresses that occur and to know the number of rivets and size of members required. It will be found in some tension members that the angles which will be strong enough to take up the stress will be too small to be riveted. In this case angles having legs of at least 2½ inches must be considered the smallest that are practical.

Because of the need of only small members where tension exists, trusses are designed with tie rods to withstand the tensil stresses. Such trusses are called "pin trusses." The compression members are made of deck beams or angles, or of some other cast or rolled shapes.

Often in galleries in theatres there is need of cantilever trusses. These offer two new considerations for the Architect to deal with. First, there is the proposition of unsymmetrical loads, and, second, the fact that either R_1 or R_2 may not act at the end, but somewhere near the centre of the truss.

This last fact gives rise to the necessity of determining the reactions, and the method used is that of finding the reactions of a simple cantliever beam. For the purpose of this article, the truss shown in Fig. 76 will explain the

method of solving such a problem. Loads of 1,000 pounds each are assumed as acting at the panel points 2—7, and loads of 500 pounds each acting at panel points 1 and 8. R_2 acts under panel point 5. Taking moments around panel point 1, the total downward moment is given as:

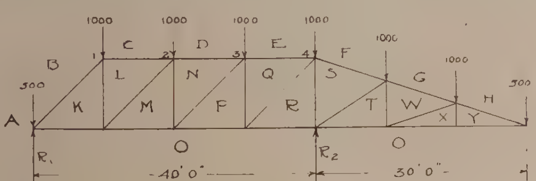
500	pounds	× 0	feet	=	000	foot-pounds.
1,000	"	× 10	"	=	10,000	" "
1,000	"	× 20	"	=	20,000	" "
1,000	"	× 30	"	=	30,000	" "
1,000	"	× 40	"	=	40,000	" "
1,000	"	× 50	"	=	50,000	" "
1,000	"	× 60	"	=	60,000	" "
500	"	× 70	"	=	35,000	" "
7,000					245,000	

245,000 foot-pounds ÷ 40 feet=6,125 pounds
7,000 — 6,125= 875 "

It will be noticed that almost all the entire load comes upon R_2 and that had there been a greater load or a greater projection beyond R_2, there might have been a negative or downward reaction at R_1. The force *ab, bc, cd, de, ef, fg, gh* and *ho* are laid off. The upward reaction—R_2—$O'O$ causes *o* to fall just below *a* and the left reaction—R_1—closes the force diagram. The stresses are laid off in the same manner as in the preceding diagrams.

To find the forces, one may start at either end of the truss. Starting at the right end and reading this first, the forces and stresses can be laid off as follows: *ho', o'y* and *yh*. There will be no stress in *XY* and the stresses around panel point 7 can next be found. No difficulty will be experienced until R_2 is reached and there need be no trouble here if it is remembered that the force of 6,125 pounds—$O'O$—is read *upward*.

If there should be a case in which is a negative moment at R_1, as is shown in Fig. 77, the reactions are determined as before. The three 1,000 pound loads and the 500 pound



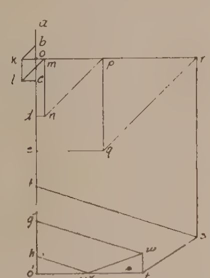


FIGURE 76

load will tend to bend the truss around R_2, and to find the magnitude of this reaction take moments around R_1.

1,000	pounds	× 8	feet	=	8,000	foot-pounds.
1,000	"	× 14	"	=	14,000	" "
1,000	"	× 20	"	=	20,000	" "
500	"	× 26	"	=	13,000	" "
3,500					55,000	

55,000 — 8=6,875 pounds
3,500 — 6,875= —3,375=R_1.

The fact that R_1 is a minus quantity shows that R_1 acts in an opposite direction to R_2. In laying off the forces it will be noticed that there is only one upward force—R_2. Starting at the first joint *ab* is plotted. *bg* is a horizontal line, and *ga* closes the diagram.

It will be found that there is no stress in *GH*, as this is simply a bracing member. At 2 *gh* is known and *bc*. *cf* can be drawn through *c* and *ih* can be laid off.

Laying off the forces and stresses around the lower joint, *hi* is known. *ij* is drawn definitely through *i* in a direction parallel to *IJ*. The point *f* is known on the stress

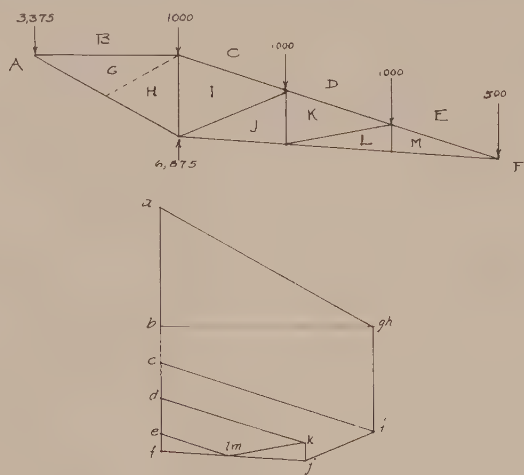


FIGURE 77

diagram and so *jf* can be plotted. The intersection of these two lines gives the point *j*. *fa* is the upward reaction—R_2—and *ah* has already been drawn.

Around panel point 3, *ji, ic,* and *cd* are already established. *dk* and *kj* are easily found. The stresses in other members can be found without any particular difficulty.

In all the articles of this series the considerations taken up have been just those with which the Architect comes in contact. There are cases in which the engineering requirements of an undertaking are such that special knowledge is necessary to solve the problems that come up. In this case it is always necessary for the Architect to call upon an engineer to design the steel. When reinforced concrete is used, further complications enter into the work that have not been touched upon. It may be said, however, that in reinforced concrete design the principles underlying it are exactly those underlying the use of steel.

Concrete beams must withstand the maximum bending moments in exactly the same manner as steel beam. The difference comes in the fact that steel beams are already designed, while concrete beams must be constructed by the contractor on the job. The aid to the engineer in having the section modulus, the general dimensions and weight of a beam given, as in the case of I-beams, is apparent, but once the added information necessary to construct the beams of concrete is known there is no particular difficulty to be experienced in this design.

If the Architect has found in these articles such information as will enable him, with the use of a steel hand-book, to design the frames for simple architectural strictness, the object of these articles has been accomplished.

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PLATES AND ILLUSTRATIONS

EDITORIAL

BAD DEBTS—THE GROWING COMPLEXITIES IN DOMESTIC WORK

WHAT may be one of the heaviest items of the overhead charges of the average Architect are his uncollectible accounts, and in any business-like Architect's office, there will soon be a determination to reduce them to a minimum. Uncollectible accounts arise, not as a rule because of insolvency or delinquency on the part of the client, but because he becomes dissatisfied with his Architect, terminates his employment, and does not seem to realize that an Architect's employment cannot be thus terminated without payment for the services rendered up to that period. The public often thinks that the Architect furnishes his drawings more or less "on approval," especially if they are only sketches, and there is nothing more difficult than to convince the average client that sketches for a commercial building or for a country house, though they may not be imposing in themselves, may still represent a considerable expenditure of time and money on the part of the Architect, for which he expects to be paid.

This attitude of the general public is regrettably stimulated by the disposition on the part of many Architects to take a chance on their sketches being satisfactory, a thing which is detrimental not only to their own interests, but to the profession at large. Certainly, if the whole profession stood firmly on its rights and insisted on payment for preliminary studies of any kind, there would be no loss of work to any member, and the loss of money to the profession as a whole would be practically cut in half. It would seem wise to explain to the client that sketches must be paid for and to tell him why; to show that the few "simple pencil sketches," which he thinks are all that will be necessary, will take in themselves but a few hours to make, but it may be possible to make them only after a week's close study of the problem and many tentative drawings. Too many Architects seem to be afraid of frightening off a client by any discussion of charges at the outset of the work, and are content to get pretty well along with their drawings, or even to send out bills to a client before determining what the percentage is to be, or the time when its several portions are to be paid. In a case like this, when the bills go out, or when the client is informed of what the Architect is going to charge him, he is in a position to more or less dictate to the Architect the terms of his employment, since the Architect may have already done so much work that if he stands stiffly upon his proper compensation and loses the job because of his stand, the loss may easily be too great to be borne.

One of the most interesting facts brought out in Mr. Blake's articles on the legal aspect of the architectural

profession, recently published in ARCHITECTURE, has a bearing on this point. No agreement as to amount of charges is necessary for an Architect to collect, nor is it even necessary for there to be any discussion about charges at all, to make them legally collectible. In other words, an Architect does not need a contract, either verbal or written, with his client; the very fact of the client having ordered him to make sketches is in itself an implied contract, binding the client to pay for them, and this view has often been sustained by the courts.

On the other hand the question of the amount due in a case like this has been variously held by different courts, and in different cities, and not infrequently a law suit is necessary to determine the value of the services rendered, which determination is usually reached in one of two ways, either by discovering the cost of the work to the Architect, including of course compensation for his own time, or by comparison with the standard schedule of charges established by the American Institute.

Now the general tendency on the part of Architects is not to attempt too vigorously to collect such charges; if the owner does not feel like paying for the drawings, the Architect lets him get away with it. Of course at times he is wise to do this, because he may have agreed that the drawings must please the owner before compensation for them is required; but in most other cases Architects owe the other members of their profession a real duty in this matter of collection. Any Architect who has an honest claim against a client should resort to every means in his power to see that the claim is paid, even having recourse to legal action where all other means fail, and in a surprising number of cases it will be found that the courts uphold the Architect's claim.

Most men rather shrink from court action, fearing that bad feeling will be engendered which will alienate possible future clients, but it will be found in the majority of cases that a man who has presented a bill which the client thinks unfair, has already alienated the client as completely as he could by any legal action, and in many cases which have come to the personal knowledge of the writer, clients who have had claims enforced upon them by process of law have come to realize that the fault was theirs and not the Architects, with the result that a better understanding has been established.

It is certainly a great deal better for a man to have either a judge or a jury to determine that his claim is just and fair and should be paid, than it is for him to write all sorts of threatening letters to a client, and then to fail to push the matter to an end, leaving the client with the presumption that the claim would not stand judicial investigation.

Next to the bad debts which arise from the preparation of sketches, probably the largest proportion arise from those cases where, after the working drawings have been prepared and estimates have been received, the client finds the cost of the work is more than he had anticipated, and decides not to proceed with it, or to employ some other man. Cases like this should be very carefully considered before recourse to court proceedings is had. In the first place there is of course a prejudice against Architects in this one respect. It has long been a commonplace that Architects' estimates of the cost of a building are nearly valueless, and for an Architect to prepare plans for a building which would cost $50,000, where the owner has only $30,000 to spend is justly culpable. There are probably no cases where the profession owes a stricter duty to the public and performs it with more laxity than in this question of cost, which is after all a most vital one. If an owner cannot build what he wants to build for his money, he should be told so with complete frankness, and not be led to believe that he can get what he wants. On the other hand, very frequently the first question which is asked an Architect, before he has any idea of the size of the building, is what its cost will be, and a rough first guess is not unusually assumed to be his estimate. Should the Architect in developing his sketches find that in order to obtain the accommodation desired, a larger building than he anticipated is necessary, the client should at once be informed of the fact, and also, if the client insists upon the specification of material, or of details of construction which are more expensive than was anticipated when the first estimate was given, he should likewise be informed. In order to be sure that a claim for working drawings will be allowed by the courts the Architect must come in with clean hands; he cannot collect where a client can clearly show that he has been misled into ordering expensive drawings for his house by mis-statements of cost. A reasonable variation in the preliminary estimates has been held not to invalidate an Architect's claim, and this reasonable variation has been fixed in many cases to be 15 per cent. though there has been no definite or uniform percentage established throughout the country as a proper latitude to be allowed.

It is probable that most Architects will endeavor to collect on a claim of this kind, where they would let a claim for sketches go by the boards, and yet their claim of payment for sketches may be just and defensible, where their claim for payment of working drawings of a building, estimates of which had greatly exceeded the allowed price, may be unjust and indefensible. Written evidence in every case of this kind is extremely important; a contract may be oral, and if it can be proven it is perfectly defensible. There may be no contract at all and still the architect may be entitled to payment; but the most satisfactory contract as to rate of commission and terms of payment will not bind a client to pay for drawings which he can show do not fulfill his desires, either in the matter of cost or of accommodation, providing of course that the Architect is not able to show that the client was informed of the probable cost, or the lack of sufficient accommodation, and either expressed himself as satisfied, or failed to express himself as dissatisfied. Collectible bad debts of any one office probably do not amount to any very great proportion of its overhead charges, but the bad debts of the profession as a whole constitute an enormous sum, and the very fact that so many people have been able to secure drawings from Architects without paying for them creates a precedent for other people who want to see if they can build for a certain sum without much real idea of going ahead.

IT is very usual to find people complaining that houses are costing a great deal more than they used to, and attributing this increase to a higher standard of wages and a greater cost of building materials. Now it is perfectly true that both labor and building materials have to some extent advanced, but this advance is more apparent than real, for mechanics in most of the trades are now speeded up far beyond the point which used to be customary, and it is a question whether the actual labor cost in a building,

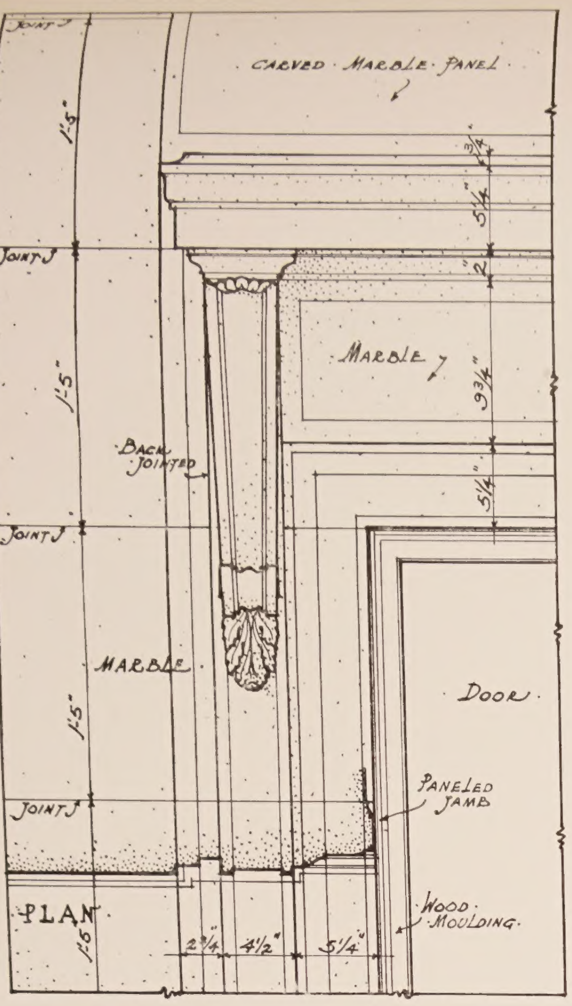
worked out on some unit scheme, would not be very much the same as it was in the good old days we read about. Building materials of certain kinds have advanced in cost, lumber being the principal one, but the other types of materials have, if anything, been reduced; cement is certainly cheaper than it was twenty years ago, and brick has remained about stationary in price. Materials of various kinds have actually decreased; the cost of electric wire per foot is less than it was fifteen years ago. Yet the houses as a whole are costing more, and people seem to find no other reason than the cost of labor and materials.

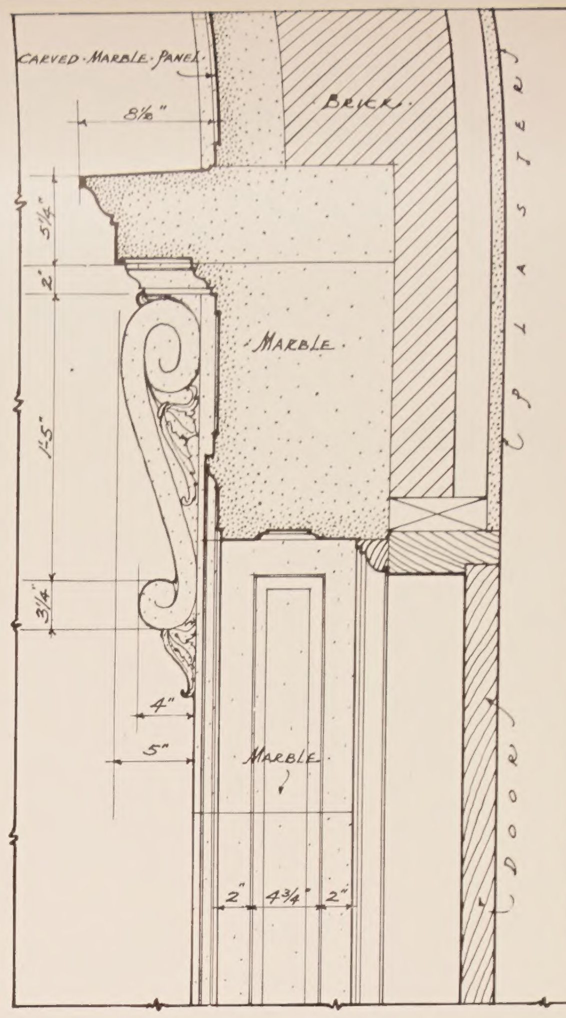
The true answer does not lie in the increased cost of these items, but in the increased complexities of the buildings themselves, and the enumeration of but a few of these to the average client will convince him that if he is spending more money for his house to-day than he would have had to spend ten or fifteen years ago, he is getting more value for it. Take such an item as electric wiring for example. The average house built fifteen years ago was wired only for bell work; to-day it is wired for electric lighting all the way through. Most people want all the lights in each room controlled by switches; the number of lights for a room has been steadily increased, and in addition a number of base plugs, wall plugs and floor plugs are usually inserted. Not infrequently arrangements for electric cooking have to be made with extra heavy wiring at such outlets, and sometimes special switches.

The house of fifteen years ago had in its kitchen a range and a hot water boiler, which was heated from the water back. It was hot in summer, and the cook complained, but everybody expected that she would complain. Now-a-days the cook is furnished with a combination coal and gas range so that she may use the cooler gas in summer, and as hot water cannot be heated from the gas range, either a special gas water heater is installed, or where, from motives of economy, this is not desired, a small coal stove is furnished to heat the boiler, which is then taken out of the kitchen because of the heat radiating from it, and placed in the cellar. The wily owner often thinks it is not an economy to run the little stove in addition to the big heating plant in winter, and therefore wants some arrangement by which the hot water for washing purposes can be heated from his steam or hot water heating system, and the Architect finds a way to do it by using a 150-gallon boiler instead of the old fashioned thirty-gallon boiler, and running the hot water in a loop to the stove and steam boiler, and in a circulation system so that there will be none wasted. Thus we are now spending four times the money on the methods for cooking and heating hot water than was formerly the case.

This is done not only in big houses, but in very small ones. The intricacies of the mechanical equipment of the big house now include many items besides the simple one of heating, such things as water softeners, artificial refrigeration, ice making machines, and forced ventilation; and in a house of any size, $5,000 will just about cover the cost of this work.

The more people know about what makes their houses cost, the less dissatisfaction there will be with their Architects, and a campaign of public education, conducted not necessarily through the newspapers, but through the personal efforts of every Architect who comes in contact with people desiring private houses, will profit the profession as a whole.





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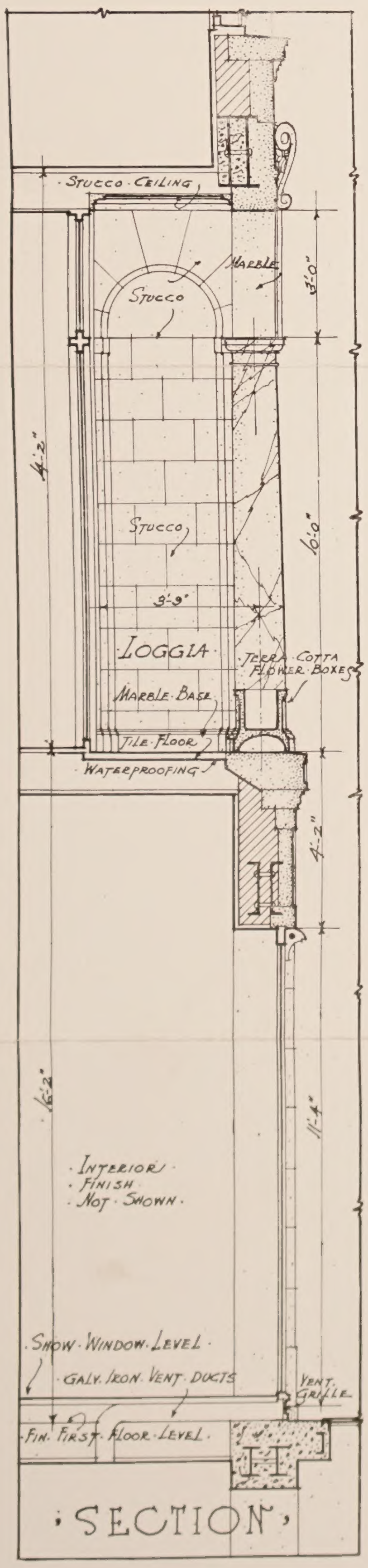

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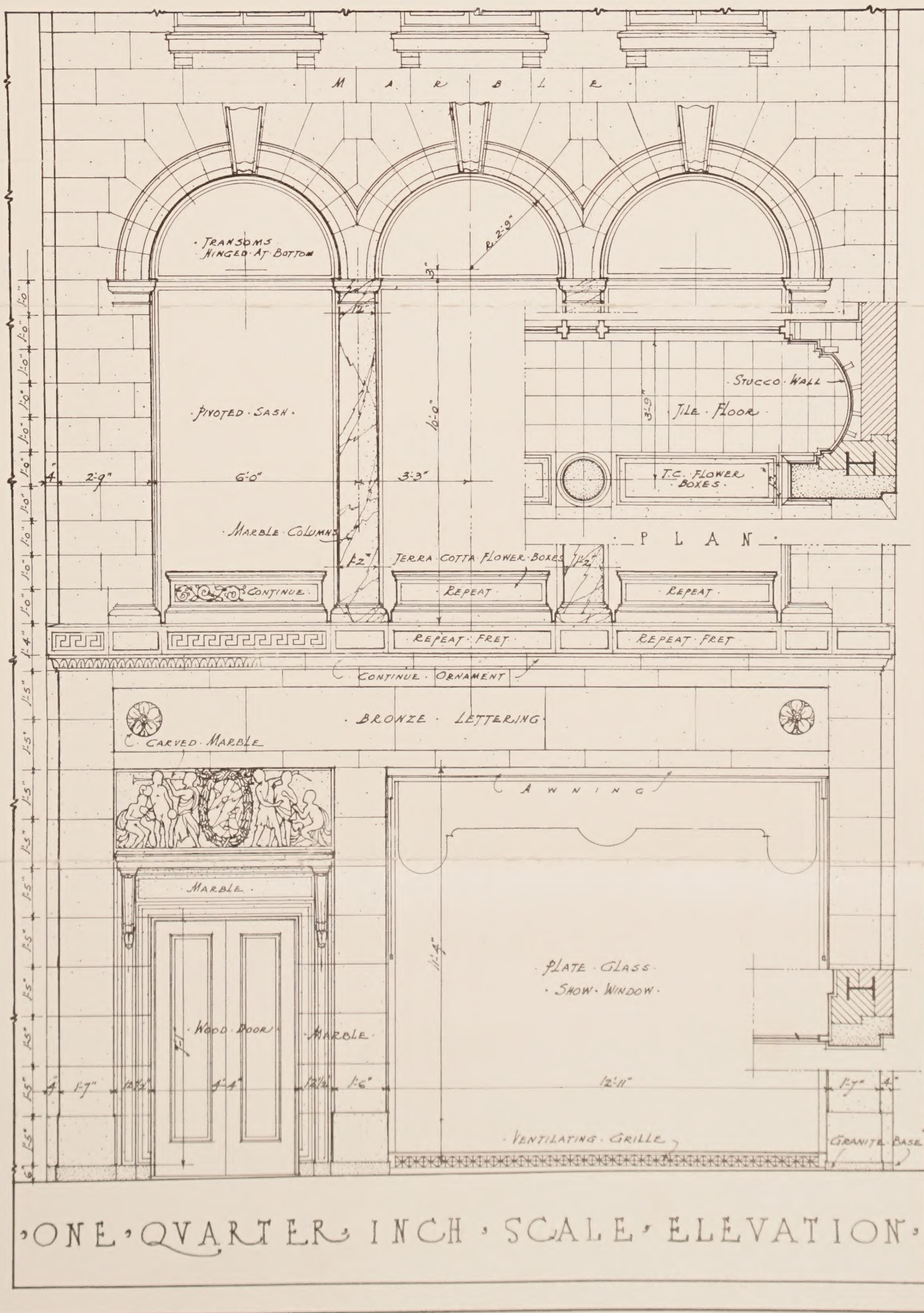

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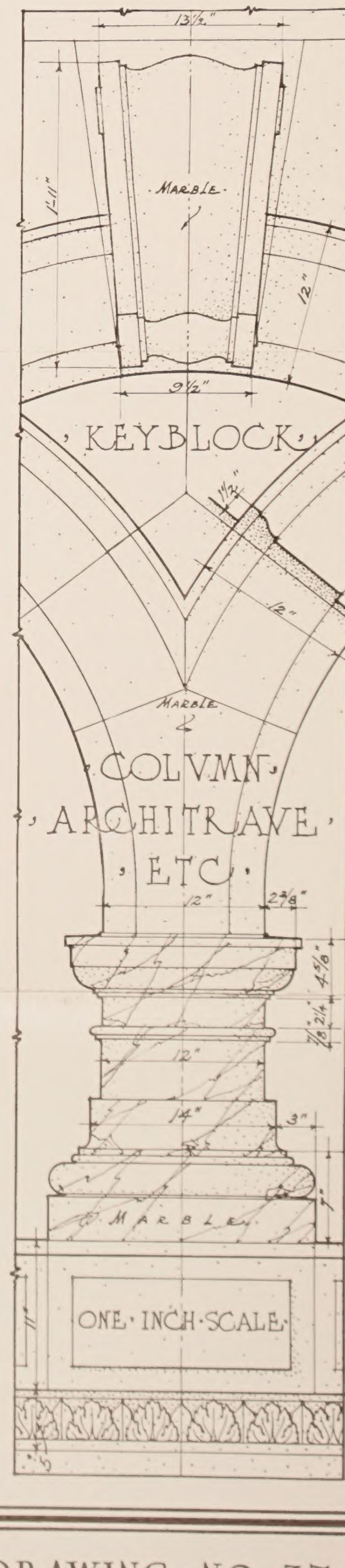

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